

- (57) A drop-head unit for supporting shuttering members used in the construction of concrete floors and/or ceilings which is movable between supporting and stripping positions along a shank. The shank has a slot 20 extending along its length and a ledge member 24 formed on both sides of the wedge engages a shoulder 26 formed at the sides of the slot. When the wedge is withdrawn, its ledge falls down the slot. Means are provided to hold the wedge captive in the slot and to correctly position the drop-head in its supporting position.

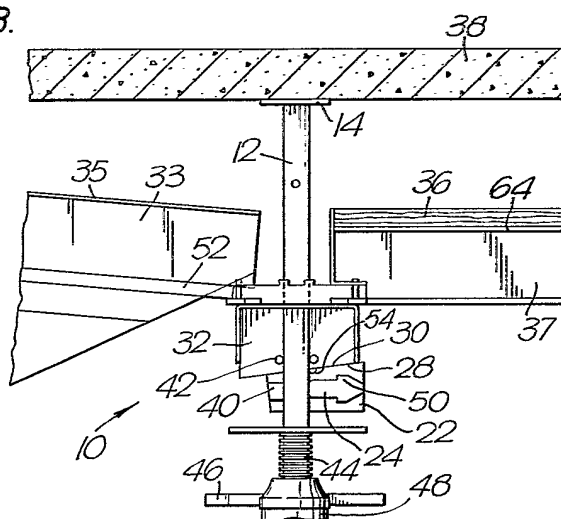


Fig. 1.

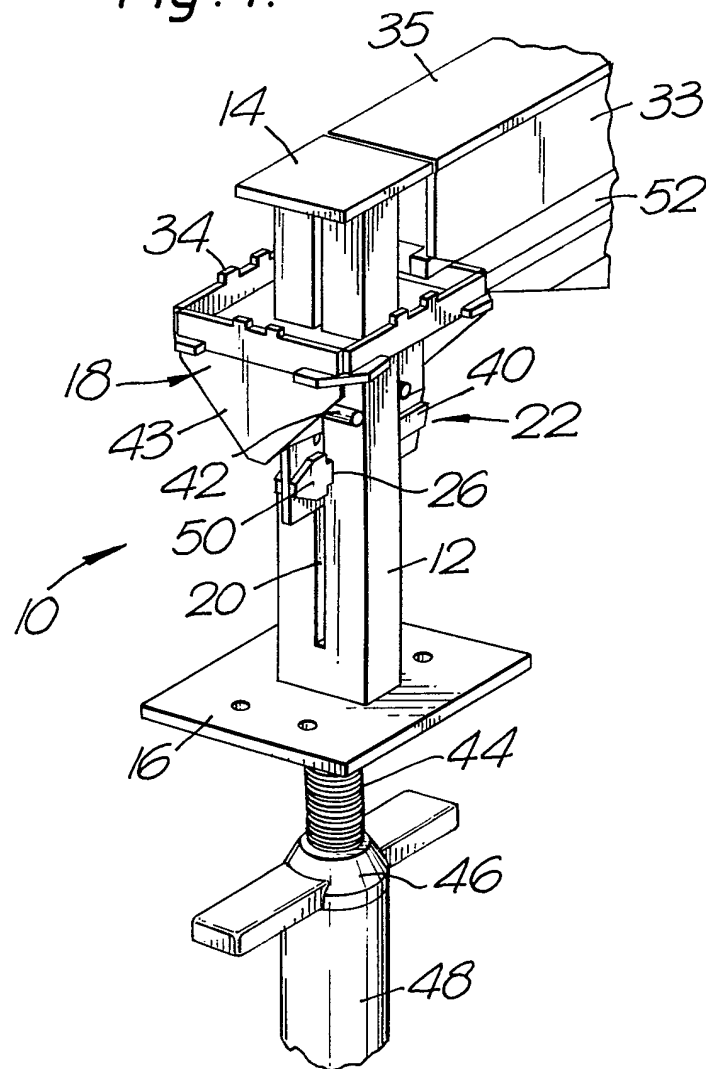


Fig.2.

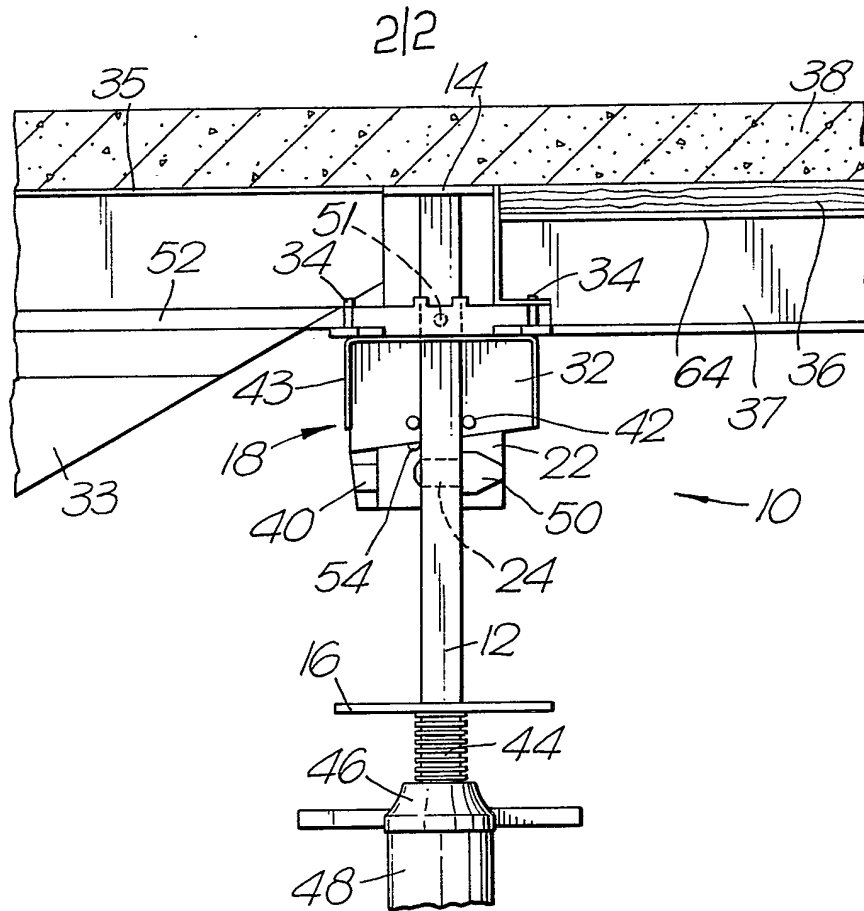
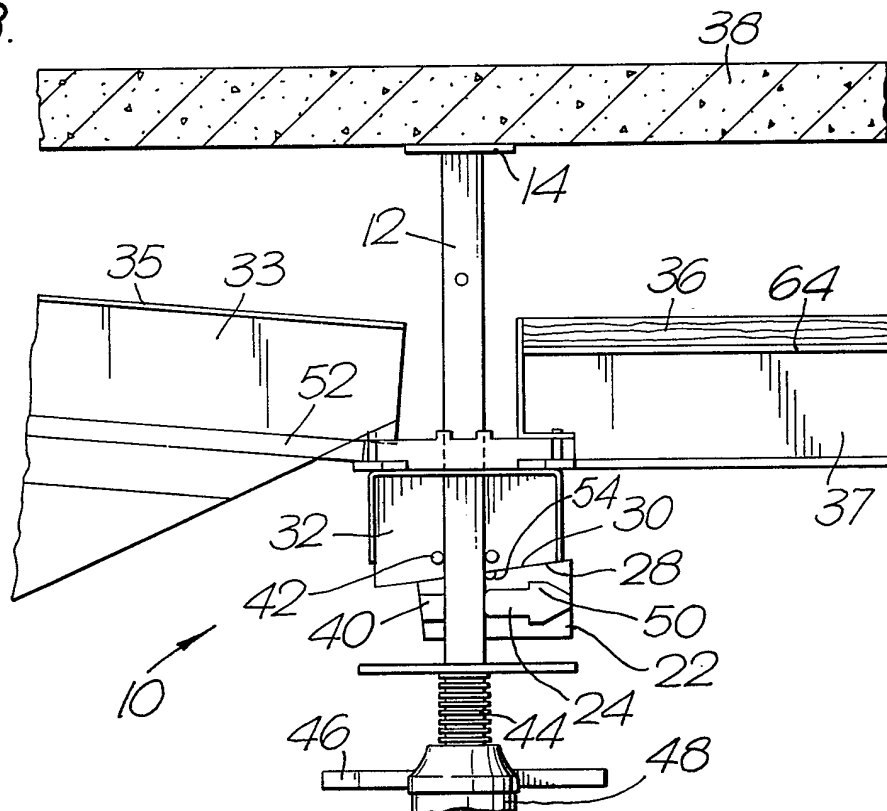


Fig.3.



SPECIFICATION

Improvements in and relating to drop-heads for concrete formwork systems

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This invention relates to drop-head units for supporting shuttering members used in the construction of concrete floors and/or ceilings.

A drop-head which is normally used at the top of a scaffold member is used to support shuttering members in two main positions, an upper position in which concrete (or other settable material) is cast onto the shuttering members, and a lower position in which the shuttering members are lowered to be stripped from partially set concrete and then removed from the drop-head for use elsewhere. The partially set concrete slab is then supported by spaced fixed head plates of the drop-head units.

A drop-head unit in accordance with the invention comprises a shank having a fixed head at one end and the other end being adapted for connection with a standard scaffold prop or the like, a drop-head slidably mounted on the shank and movable between a supporting position adjacent the fixed head and a "strip" position in which it is spaced from the fixed head characterized in that the shank is provided with a slot extending along its length between the supporting and fixed positions of the drop-head and a wedge member movable along the length of the slot between its supporting position in which a ledge formed on one or both sides of the wedge engages a shoulder (or shoulders) formed at one (or both) sides of the slot to support the drop-head in its supporting position and its strip position, wedge movement between the supporting and strip position being enabled by withdrawing the ledge(s) from the shoulder(s), means being provided to hold the member captive in the slot and to correctly position the drop-head in its supporting position relative to the fixed head.

In an aspect of the invention a formwork system for supporting concrete (or other settable material) during setting on a casting surface comprises a plurality of beams which in use span horizontally between and are supported by drop-head units, a plurality of casting panels supported by the beams and/or drop-head units, wherein each drop-head unit comprises a shank having a fixed head at one end and the other end being adapted for connection with a standard scaffold prop or the like, a drop-head which supports the beams and/or casting panels slidably mounted on the shank and movable between a supporting position adjacent the fixed head and a "strip" position in which it is spaced from the fixed head, characterized in that the shank is provided with a slot extending along its length between the supporting and fixed positions of the drop-head and a wedge member movable along the length of the slot between its supporting position in which a ledge formed on one or both sides of the wedge engages a shoulder (or shoulders) formed at one (or both) sides of the slot to support the drop-head in its supporting position and its strip position, wedge movement between the supporting and strip position being enabled by withdrawing the ledge (s) from the

shoulder(s), the wedge member having means to hold the member captive in the slot and the slot being provided with a stop correctly to position the drop-head in its supporting position relative to the fixed head so that beams and/or drop-heads support casting panels to provide a flush casting surface.

Preferably, the wedge surface of the wedge member engages a corresponding surface on the drop-head.

The distance between the supporting surface of the drop-head when in its supporting position and the fixed head, is preferably equal to the distance between the top of a beam to be supported by the drop head, and its support means.

The shank is preferably rectangular in cross-section and the drop-head preferably has a plate depending therefrom extending at right angles to the shank and formed with a lower wedge surface to engage the wedge surface of the wedge member.

When the drop-head is held by the wedge member in its supporting position and is to be moved to its strip position, the wedge is tapered in the direction to lower the drop-head slightly before the ledges on the wedge member moves clear of the shoulders so that an initial gradual strip of the concrete formwork panels takes place before the beams and panels are dropped rapidly to the strip position. This helps to reduce stock loads on the partially set concrete slab and also relieves the wedge member of the load of the cast concrete.

The drop-head is preferably provided with a member which also engages in the slot in the shank.

Preferably the means to hold the wedge member captive in its supporting position comprises a first stop mounted at one end of the wedge member and a second stop mounted at the other end of the wedge member such that the member is held captive in the slot when the drop-head is in its supporting or strip positions, and also when the drop-head unit is in use or in storage or being transferred from building site to building site. The means on or in the slot correctly positions the drop-head in its supporting position such that beams or the drop-heads support casting panels to provide a flush casting surface.

The invention will now be described, by way of example, with reference to the accompanying drawings in which:—

Figure 1 is a perspective view of one embodiment of drop-head according to the invention in its supporting position.

Figure 2 is a corresponding side view of the drop-head, and

Figure 3 is a side view of the drop-head in the lower or strip position.

The drop-head unit 10 shown in the drawings comprises a rectangular central shank 12 having a fixed upper head 14 and a lower plate 16 for connection to a standard scaffold prop.

A drop-head 18 is mounted on the shank for sliding movement between an upper "supporting" position in which it is located adjacent the fixed head 14 (see Figures 1 and 2) and a lower "strip" position as seen in Figure 3.

The shank is provided with a slot 20 which extends

along the length thereof between the fixed head and a position adjacent the lower plate 16. A wedge member generally indicated at 22 is held captive within the slot whilst being free to slide up and down the slot between a supporting position as shown in Figures 1 and 2 and a strip position shown in Figure 3.

In the supporting position a ledge 24 which is provided on each side of the wedge member, engages against a shoulder 26 cut out in each side of the slot as can clearly be seen in Figure 1. When in this position the wedge member is prevented from sliding down the slot and its upper wedge or tapering surface 28 is engaged against a corresponding tapered surface 30 formed on the lower edge of a plate 32 extending through the slot transversely to the shank and forming part of the drop-head 18. It will thus be appreciated that the drop-head is held fixed in its upper supporting position.

When in this position beams, such as that illustrated at 33 which engage on upstanding knib 34 on the drop-head so as to be supported, thereby span between adjacent units with the top surfaces 35 of the beams flush with the top surface of the fixed heads 14 of the drop-head units. Formwork panels 36 are supported either by the upper surfaces 56 of beams 37, by ledges 52 of beams 33 or by drop-heads 18. Various alternative arrangements of beams 33, 37 and panels 36 are described in co-pending British Application No. 8117524.

A cut-out 54 is provided in the top surface of the web to receive a pin, nail or the like to lock the wedge in the supporting position during casting.

A concrete slab 38 (see Figures 2 and 3) is then cast over the panels, the top surfaces of which are flush with the top surfaces of the beams 33 and fixed heads, to produce a unitary slab.

When the concrete slab is partially set the drop-heads are lowered resulting in the lowering of the beams 33, 37 and panels 36 leaving the partially set concrete slab supported (as shown in Figure 3) by the fixed heads 14 of the drop-head units. The beams and panels can then be re-used elsewhere.

In order for the drop-heads to be lowered on the shanks the wedge members 22 are moved to the right (as shown in the drawings). During this movement the drop-head moves gradually down due to the tapering of the corresponding surfaces 28 and 30 of the wedge member 22 and plate 32. This means that the initial strip of formwork panels and beams from the concrete is gradual which helps to avoid shock loads and the wedge is relieved of the load of the concrete.

Once the wedge member is moved to the position shown in Figure 3 in which the ledges 24, which only extend partially along the length of each side of the wedge member, are clear of the shoulders 26 in the slot, the wedge member is free to fall down the slot thus enabling the drop-head and the beams and panels supported thereby, also to drop down the slot to the strip position shown in Figure 3.

The wedge member 22 is further provided with means to hold the member captive in the slot 20.

This means comprises a first stop 40 at the smaller end of the member 22 and a second stop 50 at the

larger end. These two stops 40 and 50 prevent any possibility of the wedge being lost either when the drop-head 18 is in its supporting or strip position, or when the drop-head unit 10 is in use, in storage, or being transferred from one position to another.

A stop 51 is positioned on the shank 12 in slot 20 such that when the drop-head is in its supporting position the stop 51 engages the upper face of the head 18 (see Figure 2), the upper surface 35 of the beam 33 and top surface of the panel 36 are automatically flush with the upper surface of the head 14. Accordingly a flush casting surface is achieved simply and efficiently by knocking the wedge member 22 along the ledges 24 until the stop 51 contacts the head 18.

The plate 30 attached to the drop-head is provided with two projecting pins 42 on each side which engage the sides of the shank to help to provide rigidity and to prevent the drop-head twisting relative to the shank. The drop-head is further provided with two downward projecting flanges 43 attached to two edges of the plate 30 to provide rigidity to the plate 30.

In accordance with standard practice the drop-head unit 10 may either be supported on the top plate of a standard prop which may be bolted to the plate 16 of the drop-head unit, or alternatively a screwed shank 44 which extends down from the plate 16 may be engaged by a nut member formed with a circular hub 46 which fits over the top of a standard tubular scaffold prop 48. This enables height of the top plate 14 of the drop-head unit to be adjusted relatively to the prop, for alignment and to ensure that the surfaces of the top plate 14 and of the beams 33 and panels 36 are at the desired level.

CLAIMS

1. A drop-head unit comprising a shank having a fixed head at one end and the other end being adapted for connection with a standard scaffold prop or the like, a drop-head slidably mounted on the shank and movable between a supporting position adjacent the fixed head and a "strip" position in which it is spaced from the fixed head, characterized in that the shank is provided with a slot extending along its length between the supporting and fixed positions of the drop-head and a wedge member movable along the length of the slot between its supporting position in which a ledge formed on one or both sides of the wedge engages a shoulder (or shoulders) formed at one (or both) sides of the slot to support the drop-head in its supporting position and its strip position, wedge movement between the supporting and strip position being enabled by withdrawing the ledge(s) from the shoulder(s), means being provided to hold the wedge member captive in the slot and to correctly position the drop-head in its supporting position relative to the fixed head.

2. A drop-head unit as claimed in Claim 1 wherein the distance between the supporting surface of the drop-head in the supporting position and the fixed head, is equal to the depth of a beam supported by the drop head.

3. A drop-head unit as claimed in Claim 1 or 2 wherein the drop head has a plate depending there-

from extending at right angles to the shank and formed with a lower wedge surface to engage the wedge surface of the wedge member.

4. A drop-head unit as claimed in any preceding
5 claim wherein the wedge is tapered so that on wedge movement from the supporting to strip position, the drop-head is lowered slightly before the ledges are withdrawn from the shoulders.

5. A drop-head unit as claimed in any preceding
10 claim wherein the means to hold the wedge member captive and to correctly position the drop-head in its supporting position comprises two stops mounted on the wedge member, the first stop engaging the shank when the drop-head is in its strip position and
15 the second stop engaging the shank when the drop-head is in its supporting position.

6. A formwork system for supporting concrete (or other settable material) during setting on a casting surface, comprising a plurality of beams which in
20 use span horizontally between and are supported by drop-head units, a plurality of casting panels supported by the beams and/or drop-head units, wherein each drop-head unit comprises a shank having a fixed head at one end and the other end being
25 adapted for connection with a standard scaffold prop or the like, a drop-head which supports the beams and/or casting panels slidably mounted on the shank and movable between a supporting position adjacent the fixed head and a "strip" position in which it
30 is spaced from the fixed head, characterised in that the shank is provided with a slot extending along its length between the supporting and fixed positions of the drop-head and a wedge member movable along the length of the slot between its supporting position
35 in which a ledge formed on one or both sides of the wedge engages a shoulder (or shoulders) formed at one (or both) sides of the slot to support the drop-head in its supporting position and its strip position, wedge movement between the supporting and strip
40 position being enabled by withdrawing the ledge(s) from the shoulder(s), the wedge member having means to hold the member captive in the slot and means being provided correctly to position the drop-head in its supporting position relative to the
45 fixed head so that beams and/or drop-heads support casting panels to provide a flush casting surface.

7. A formwork system as claimed in Claim 6 wherein the means engage the shanks of the drop-head units to correctly position the beams and/or
50 drop-heads supporting the casting panels to provide a flush casting surface.

8. A formwork system as claimed in either Claim 6 or 7 wherein the distance between the supporting
55 surface of the drop-head in the supporting position and the fixed head, is equal to the distance between the top of a beam supported by the drop-heads and its support means.

9. A formwork system as claimed in any one of
60 Claims 6 to 8 wherein each drop-head has a plate depending therefrom extending at right angles to the shank and formed with a lower wedge surface to engage the wedge surface of the wedge member.

10. A formwork system as claimed in any one of
65 Claims 6 to 9 wherein the wedge member is tapered

so that on wedge movement from the supporting to strip position, the drop-head is lowered slightly before the ledges are withdrawn from the shoulders.

11. A formwork system as claimed in any one of
70 Claims 6 to 10 wherein the means to hold the wedge member captive comprises two stops mounted on the wedge member.

12. A formwork system as claimed in any of the preceding claims in which the means to position the
75 drop-head in its supporting position comprises a stop on the shank to engage the top of the drop-head when in its supporting position.

13. A drop-head unit substantially as herein described with reference to the accompanying drawings.
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14. A formwork system substantially as herein described with reference to the accompanying drawings.

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ABSTRACT:

A drop-head unit for supporting shuttering members used in the construction of concrete floors and/or ceilings which is movable between supporting and stripping positions along a shank. The shank has a slot 20 extending along its length and a ledge member 24 formed on both sides of the wedge engages a shoulder 26 formed at the sides of the slot. When the wedge is withdrawn, its ledge falls down the slot. Means are provided to hold the wedge captive in the slot and to correctly position the drop-head in its supporting position. □